938D SMD Soldering Tweezers

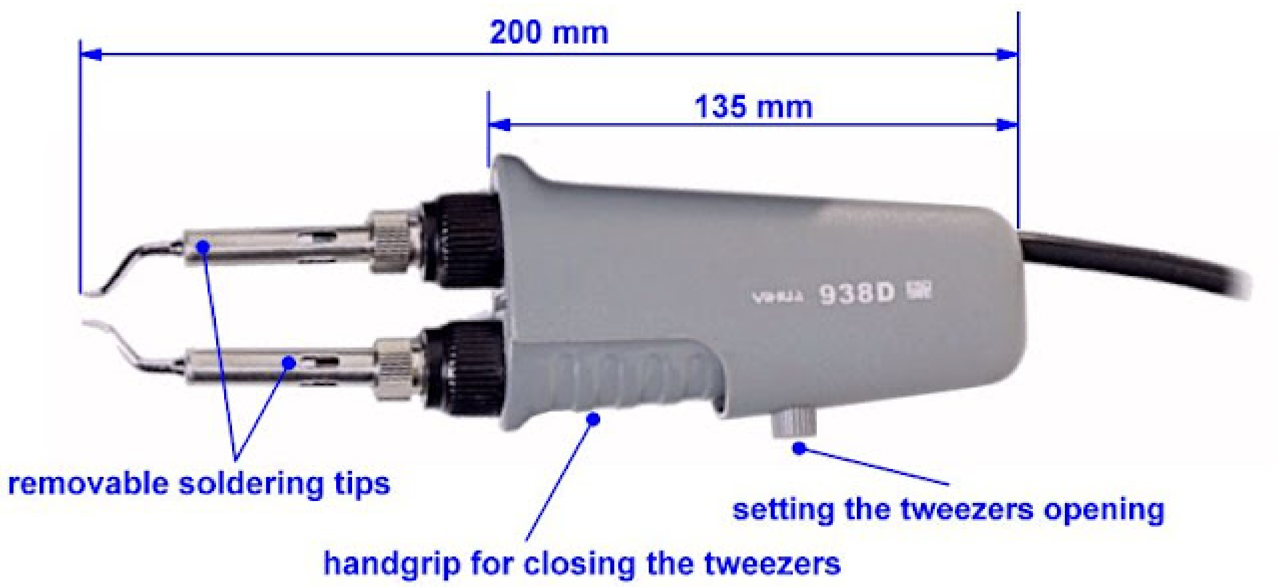
(This guide was written by Jos Verstraten on 20-01-2019)

Delivered in a sturdy cardboard box
Yihua's 938D, delivered in a sturdy cardboard box, consists of three parts:
- The actual soldering tweezers.
- A small box in the cable with which you set the temperature.
- A stand for the soldering tweezers.



The three parts that make up the 938D and its sturdy packaging.

The soldering tweezers themselves
The tweezers are in total about twenty centimetres long and have a hand grip of 135 mm. At the bottom there is a small control knob with which you can set the maximum tweezers opening. The two parts of the tweezers are internally connected with a spring, which you can squeeze with the grip. This closes the two soldering tips of the tweezers around, for example, an SMD resistor. The two parts of the tweezers are in fact two small soldering tips, each with its own electronically controlled heating element. As with most soldering irons, you can unscrew these two tips from the device. You can easily replace them or mount a new heating element. The whole is quite heavy, 0.4 kg, but still easy to hold. The soldering tweezers are connected with an approximately one metre long cable to the control box, which cannot stand on your workbench, but swings on the cable.



The soldering tweezers consist of two small soldering tips that form the two parts of the tweezers.

The control box
This 135 mm long box, which goes with an approximately one meter long cable to the mains plug and with an equally long cable to the soldering tweezers, contains the intelligent temperature control of the soldering tips. That 'intelligent' is not an advertising slogan, because there is indeed some smart electronics in the box. For example, the 938D does not work with a thermostat or with the curie effect, like the well-known Weller soldering irons. Instead, a PID control is used. The letters PID stand for **P**roportional, **I**ntegrating and **D**ifferentiating. A microcontroller calculates the difference between the set temperature and the actual temperature of the tips. If the difference is large, then a lot of power is supplied so that the tips quickly heats up to the set temperature. If the difference is small, much less power is supplied. In this way, the tips remain better at the set temperature than with the on/off control in a thermostat or curie control.
With a potentiometer you can set the tip temperature between 200 °C and 480 °C. The maximum power that the electronics can deliver to the two tips is not less than 2 x 60 W. With a switch you can change the display between measurement in °C or °F. Finally, there is of course also an on/off switch. An LED will light up when the soldering tips are powered.



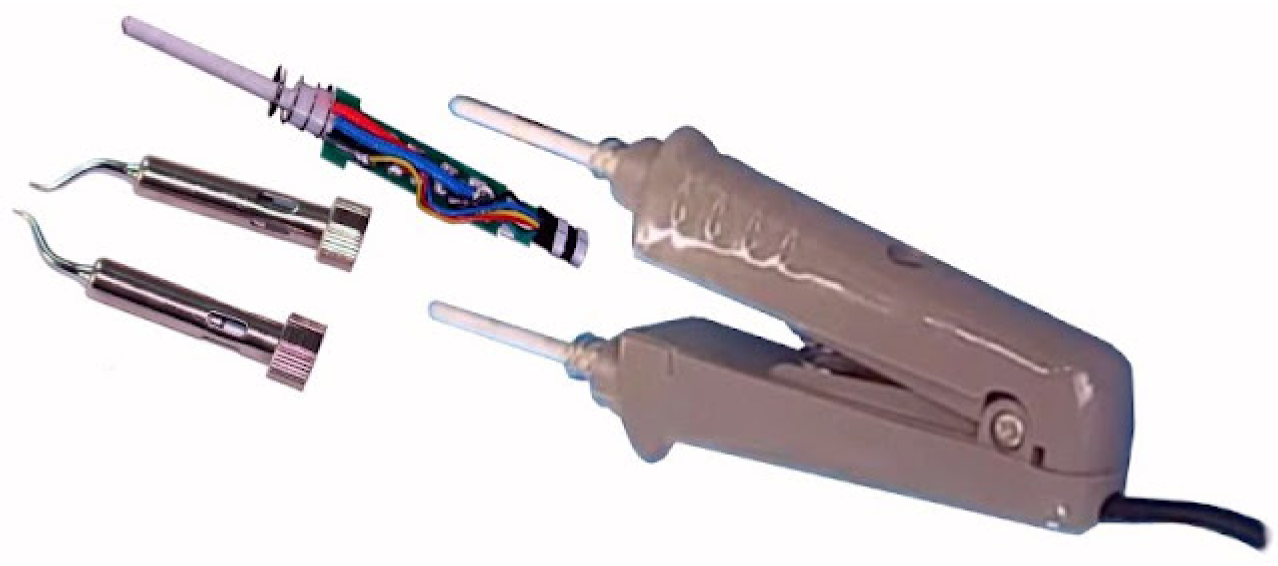
The control box is located in the cable between the 230 V mains and the soldering tweezers.

The stand and the intelligent sleep mode
You can put the soldering iron in the stand when you do not need the device for a while. Here is a second aspect of intelligence. After ten minutes in the stand, the soldering iron goes into sleep mode, reducing the tip temperature to 200°C. Simply grasp the iron to reactivate the device and thanks to the PID control, the tips quickly reach the set temperature.



Yihua's 938D in its stand, ready to go to its sleep mode.

The parts of the soldering tweezers of the 938D
The figure below shows the different parts that make up the soldering tweezers. Separate tips are for sale for approximately € 10.00 per set. A separate heating element costs approximately € 5.50. It is important to keep in mind that the soldering tips are earthed. This has advantages in terms of the absence of static electricity on the tips, but has the consequence that you may never solder in a live circuit (if you ever intended to).

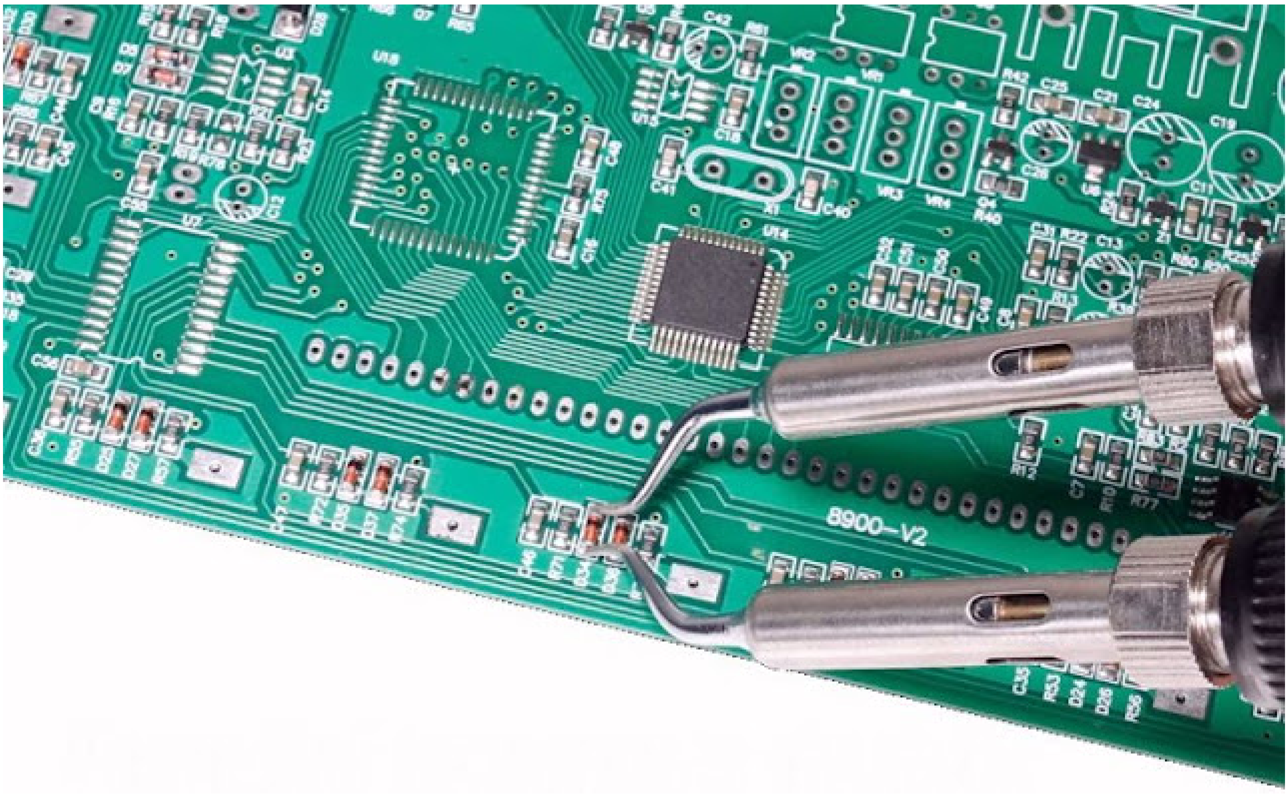


The parts of the soldering tweezers.

Technical specifications of the Yihua 938D

- **Manufacturer:** Yihua
- **Type number:** 938D
- **Supply voltage:** 130/220 V_{ac} ±10 % ~ 50/60 Hz
- **Maximum power:** 120 W
- **Temperature range:** 200 °C ~ 480 °C (392 °F ~ 896 °F)
- **Temperature stability:** ±2 °C
- **Resistance of the soldering tips to ground:** 2 Ω max.
- **Voltage between the soldering tips and grounding:** 2 mV max.
- **Overall dimensions:** 37 cm x 18 cm x 8 cm
- **Total weight:** 0.8 kg
- **EAN code:** 0666022752978

Working with the 938D
If you need to desolder an SMD component from a PCB, press the two soldering tips on the two soldering islands on the PCB. The solder melts and you can lift the part with the soldering iron from the PCB. If you have to solder a part on the PCB, first tinned the two soldering islands. Then clamp the part between the two soldering tips and put it in place on the PCB. Of course, it is absolutely essential that you have a steady hand and a good magnifying glass.



Working with the 938D.